

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of)	
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A National Broadband Plan for Our)	GN Docket No. 09-51
Future)	
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To: The Commission

REPLY COMMENTS OF SOUTHERN COMPANY SERVICES, INC.

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EXECUTIVE SUMMARY

Southern reiterates its full support of the Commission's efforts to develop a national broadband plan that promotes the deployment and availability of broadband infrastructure and addresses the important public policy goals enumerated by Congress in the Recovery Act. However, Southern would again like to emphasize that the national broadband plan should not and cannot be developed in isolation from other national policy goals set by Congress and the Administration. In particular, Southern urges the Commission to give strong consideration to the ways in which the national broadband plan can advance the important national interests in energy independence and efficiency and the security and reliability of our nation's critical infrastructure.

As Southern and other commenters have described, utilities and other critical infrastructure industry (CII) entities are charged with the safe, reliable, and efficient provision of energy and other essential services to the public, and – as the legislation described above demonstrates – their operations are considered to be vital national interests.

In order to provide these essential public services on which all Americans depend, utilities rely heavily on a number of different wireless applications and services in support of their critical utility operations. However, utilities currently find themselves compelled to operate with significant constraints on their access to available, dedicated spectrum suitable for their operational needs. Moreover, the demands on utility communications systems will be even greater as energy regulators require utilities to operate more efficiently and to enhance the control systems needed to ensure greater reliability.

Reliable wireless communications are essential to utility operations, and demands on these communications systems will be even greater with the deployment of smart grid technologies and other broadband applications, as well as the implementation of reliability and

cybersecurity/critical infrastructure protection standards. However, utilities already face significant spectrum constraints even as their need for spectrum is rapidly increasing. Southern therefore again urges the Commission to not only maintain the limited amount of spectrum currently available to utilities and other critical infrastructure industries, but also to make additional spectrum available for the essential internal communications systems that support utility and CII operations.

With respect to spectrum allocation and spectrum policy, the Commission must take great care that any actions or recommendations that it may adopt will serve the public interest as a whole, not just the interests of commercial service providers. If the Commission should decide to conduct a spectrum inventory, as numerous commenters recommend, Southern urges the Commission to take into account the current and future spectrum needs of all spectrum users and spectrum applications. Specifically, Southern urges the Commission to exclude from its broadband analysis those bands that are currently used to support critical utility and CII operations, and to expand the purpose of its inventory to identify bands that may be suitable for the private internal wireless broadband applications that utilities and other CII entities will need to meet increasing demands on the safety, reliability, and efficiency of their critical infrastructure operations.

In addition, bands used by public safety, utilities, and other CII entities – which support communications systems that must work twenty-four hours a day, seven days a week, 365 days a year at a standard of reliability of 99.999 percent – should not be considered for shared or “opportunistic” use at least until sufficient experience has been obtained to prove out *with absolute certainty* that opportunistic use of these bands (i) would not interfere, and (ii) would be

terminated immediately upon a need to access this spectrum for public safety or critical infrastructure applications.

Finally, Southern joins with other commenters in again urging the Commission to make additional spectrum available for utilities and other critical infrastructure industries. The spectrum bands currently relied on for utility and CII operations are increasingly congested and scarce, and narrow bandwidths and the technical and operational rules for some of these bands render them inadequate for current and future utility sector needs. Utilities also require access to additional spectrum in order to deploy new smart grid technologies – as the Congressional Research Service recently concluded: “[A]n efficient Smart Grid requires spectrum capacity to support the broadband communications infrastructure required to operate the grid. A Smart Grid policy that presumes the availability of suitable spectrum for wireless connections could fall short of its intended goal unless spectrum policy is aligned.”

Accordingly, in response to Congress’ requirement that the national broadband plan include plans to advance policy goals such as energy independence and efficiency, public safety and homeland security, and overall consumer welfare, the Commission should consider as part of this proceeding a plan to make additional spectrum available to utilities and other CII users.

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REPLY COMMENTS OF SOUTHERN COMPANY SERVICES, INC.

I. THE NATIONAL BROADBAND PLAN SHOULD ADDRESS NATIONAL INTERESTS IN ENERGY AND CRITICAL INFRASTRUCTURE

¹ / *A National Broadband Plan for Our Future*, GN Docket No. 09-51, Notice of Inquiry, FCC 09-31 (rel. April 8, 2009) (“*NOI*”). By Order, DA 09-1420, released June 25, 2009, the deadline for Reply Comments was extended to July 21, 2009.

² / American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009) (“Recovery Act”).

and cannot be developed in isolation from other national policy goals set by Congress and the Administration.

Rather, as Congress made clear in Section 6001 of the Recovery Act,³ the national broadband plan should be viewed and developed as one of many interrelated components of an expansive national public policy effort promoting several objectives across a wide array of interests and issues. The Commission should therefore ensure that its national broadband plan does not become focused too narrowly on broadband deployment *per se*, but looks also to how broadband fits into the “big picture” for America’s future.

In particular, Southern urges the Commission to give strong consideration to the ways in which the national broadband plan can advance the important national interests in energy independence and efficiency and the security and reliability of our nation’s critical infrastructure. These interests have been repeatedly emphasized by Congress and by both the previous and current Administrations through the enactment of significant legislation such as the Energy Policy Act of 2005,⁴ the Energy Independence and Security Act of 2007,⁵ and the energy provisions of the Recovery Act. The relationship between these important national interests and the current debate on spectrum policy was recently captured in a report to Congress by the Congressional Research Service. Specifically, the report stated:

Ideally, spectrum policy should be synchronized with broadband policy. The effort to move to energy efficiency is an example of how spectrum policy can affect other policy goals ... [A]n efficient Smart Grid requires spectrum capacity to support the broadband communications infrastructure required to operate the grid. A Smart Grid policy that presumes the availability of suitable spectrum for

³ / See Recovery Act § 6001(k)(2)(D).

⁴ / Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594 (2005).

⁵ / Energy Independence and Security Act of 2007, Pub. L. No. 110-140, 121 Stat. 1492 (2007).

wireless connections could fall short of its intended goal unless spectrum policy is aligned.⁶

As Southern and other commenters have described, utilities and other critical infrastructure industry (CII) entities⁷ are charged with the safe, reliable, and efficient provision of energy and other essential services to the public, and – as the legislation described above demonstrates – their operations are considered to be vital national interests.⁸

In order to provide these essential public services on which all Americans depend, utilities rely heavily on a number of different wireless applications and services in support of their critical utility operations. However, utilities currently find themselves compelled to operate with significant constraints on their access to available, dedicated spectrum suitable for their operational needs.⁹ Moreover, the demands on utility communications systems will be even greater as energy regulators require utilities to operate more efficiently and to enhance the control systems needed to ensure greater reliability.

As the American Petroleum Institute (API) stated, the Commission therefore “should ensure that its plan looks beyond a carrier-centric viewpoint and takes into account the unique needs of private broadband users,” particularly with respect to the pressing requirements of the nation’s energy and critical infrastructure industries.¹⁰ In this way, the Commission can ensure

⁶ / Linda K. Moore, *Spectrum Policy in the Age of Broadband: Issues for Congress*, CRS Report for Congress at 7 – 8 (2009).

⁷ / See 47 C.F.R. § 90.7 (definition of “critical infrastructure industry”).

⁸ / See Comments of Southern; Comments of the Utilities Telecom Council and the Edison Electric Institute (UTC/EEI); Comments of the American Petroleum Institute (API); Comments of the National Rural Electric Cooperative Association (NRECA). See also Comments of Motorola at 8 – 9 and 32 – 36.

⁹ / See generally Comments of Southern; Comments of UTC/EEI; Comments of API; Comments of the Enterprise Wireless Alliance (EWA); See also Comments of Motorola at 8 – 9.

¹⁰ / Comments of API at 1.

that its national broadband plan achieves the goals of the Recovery Act to advance consumer welfare, ensure public safety and homeland security, and encourage energy independence and efficiency.¹¹

II. THE NEED FOR WIRELESS COMMUNICATIONS AND SPECTRUM FOR UTILITY AND CRITICAL INFRASTRUCTURE INDUSTRIES

A. Utilities and Other Critical Infrastructure Industries Rely on Wireless Communications

In its initial comments, Southern described for the Commission the spectrum needs of utilities and other critical infrastructure industries (CII). As Southern explained, utilities rely on a number of different wireless applications and services, such as private land mobile radio systems for crew communications, supervisory control and data acquisition (SCADA) systems,¹² and other applications necessary to ensure the safe, reliable, and efficient delivery of electric power.¹³ Other commenters made the same point.

¹¹ / Recovery Act § 6001(k)(2)(D).

¹² / As described by the National Telecommunications and Information Administration (NTIA): “SCADA systems are generally computer-controlled radio communications links that allow a user to control and monitor power generation, storage and distribution systems without having to deploy staff where the equipment is located ... As modern utility systems have increased in complexity, SCADA systems have become critical components of their command and control infrastructure. These systems help to automate tasks like opening and closing circuit breakers, monitoring system reliability, and monitoring alarms for overload conditions.” Marshall W. Ross and Jeng F. Mao, *Current and Future Spectrum Use by the Energy, Water, and Railroad Industries*, U.S. Department of Commerce, National Telecommunications and Information Administration, Jan. 2002, at 3-10.

Southern’s SCADA system enables its operating companies to monitor transmission and distribution operations in real time; quickly identify potential or actual problems (such as outages); adjust voltages and deenergize lines to efficiently manage load levels, prevent or contain outages, and ensure the safety of the public (*e.g.*, from downed lines, etc.); and collect and transmit voluminous amounts of data between remote facilities and headquarters, thus increasing the efficiency of field inspection and maintenance operations and ensuring the integrity of the power grid.

¹³ / Comments of Southern at 5 – 6.

For example, the National Rural Electric Cooperative Association (NRECA) stated that electric cooperatives’ “number one priority is to keep the lights on, safely and reliably, an impossibility without robust and reliable communications systems they can count on.”¹⁴ Similarly, API stated, “The continued operation of reliable and efficient communications systems by petroleum and natural gas companies is absolutely essential to protecting lives, health and property, both in connection with day-to-day operations of these companies, as well as during responses to emergency incidents. These systems are integral to the production and delivery of our nation’s energy resources to the public, as well as its economic well being.”¹⁵

B. Wireless Communications are Essential to “Smart Grid” Deployment

Several commenters also addressed the critical role of wireless communications and technologies – particularly wireless broadband – in the deployment of new “smart grid” systems. Motorola stated that many utilities implementing advanced metering infrastructure (AMI) systems “are also realizing that to truly harness the power of the Smart Grid, they must also have a separate wireless broadband infrastructure capable of delivering 24/7 high-speed communication to enable a variety of Smart Grid benefits,” including “more cost-effective backhaul of AMI data, delivery of sophisticated energy management/control programs and real-time connectivity within the utility to help improve service delivery, outage management and overall productivity.”¹⁶ In its comments, Motorola also provided descriptions and additional details regarding some of the features of a “Connected Utility,” including: (i) remote monitoring and control (*e.g.*, SCADA, video surveillance, etc.); (ii) WiFi hotspots for field work; (iii) demand-response services; (iv) load management; and (v) 6 GHz underbuild network expansion

¹⁴ / Comments of NRECA at 13.

¹⁵ / Comments of API at 3.

¹⁶ / Comments of Motorola at 32 – 33.

and upgrades.¹⁷ According to Motorola, “the deployment of a wireless broadband communications network for Smart Grid applications enables the utility to truly become a ‘Connected Utility’.”¹⁸

IEEE-USA stated that, for the “functional areas” of smart grid, “broadband is either required as a fundamental enabling technology, or can serve as a highly desirable means of removing bandwidth constraints.”¹⁹ IEEE-USA broke down the need for broadband into the following categories:

- Basic need for high bandwidth and low latency. As an example, IEEE-USA stated, “The typical requirement for intra-substation communications related to protective relays²⁰ is four milliseconds ... [which] can only be achieved on a broadband network.”;
- Need for communication with a large number of nodes; and
- Needs related to new communications protocols and related data models and structures that “facilitate the common semantic framework that FERC has identified as a priority.”²¹

According to IEEE-USA, these broadband capabilities “will be needed wherever electricity is generated, transmitted, distributed, or used,” including rural and urban locations, poletop and substation sites, and on customer premises as well as electric power grid facilities.²²

However, as the Utilities Telecom Council and the Edison Electric Institute (UTC/EEI) cautioned, “It is important to distinguish between smart grid applications and the networks that

¹⁷ / *Id.* at 33 – 34.

¹⁸ / *Id.* at 33.

¹⁹ / Comments of IEEE-USA at 15.

²⁰ / Protective relaying involves tripping circuit breakers to prevent a power fault on the electric transmission grid from cascading and potentially creating wide-area blackouts or damage to other parts of the grid.

²¹ / Comments of IEEE-USA at 15.

²² / *Id.*

support them.” As UTC/EEI correctly noted, “Too often, the public policy discussion of smart grid focuses on the applications and forgets that the *network* is what enables the applications. As utilities deploy smart grid, they will need to enhance and expand their existing communications networks to provide greater coverage and capacity.”²³

C. Other Broadband Needs of Utilities and Critical Infrastructure Industries

Utility and CII needs for broadband in general, and wireless broadband in particular, extend beyond smart grid applications. Pursuant to the Energy Policy Act of 2005, the Federal Energy Regulatory Commission (FERC) and the North American Electric Reliability Corporation (NERC) have adopted mandatory and enforceable reliability standards for electric utilities, including cybersecurity standards. Compliance with these standards requires utilities to have reliable, secure communications systems capable of handling large amounts of data and traffic with an extremely low level of latency that only broadband can provide. Other broadband applications needed by utilities include, but are not limited to, mapping for remote locations and for pinpointing outages or other problems, the ability to transmit schematics, blueprints and other necessary data to crews in the field, and video surveillance to prevent copper theft (an increasingly serious problem) and provide overall security throughout the grid.

Reliable wireless communications are essential to utility operations, and demands on these communications systems will be even greater with the deployment of smart grid technologies and other broadband applications, as well as the implementation of reliability and cybersecurity/critical infrastructure protection standards. However, utilities already face significant spectrum constraints even as their need for spectrum is rapidly increasing. As discussed below in these reply comments, Southern therefore again urges the Commission to not

²³ / Comments of UTC/EEI at 6 (emphasis added).

only maintain the limited amount of spectrum currently available to utilities and other critical infrastructure industries, but also to make additional spectrum available for the essential internal communications systems that support utility and CII operations.

III. ANY SPECTRUM INVENTORY MUST CONSIDER THE NEEDS OF ALL SPECTRUM USERS

As the initial comments in this proceeding demonstrate, there is broad support for the Commission's proposal to conduct a "spectrum census" or "spectrum inventory" to identify spectrum bands that may be suitable for wireless broadband services. Southern agrees with these commenters that a spectrum inventory could be a valuable tool to assist the Commission and Congress in improving the nation's spectrum management policies and priorities.

However, if the Commission should decide to conduct a spectrum inventory, Southern urges the Commission to take into account the current and future spectrum needs of all spectrum users and spectrum applications. Specifically, Southern urges the Commission to exclude from its broadband analysis those bands that are currently used to support utility and CII operations, and to expand the purpose of its inventory to identify bands that may be suitable for the private internal wireless broadband applications that utilities and other CII entities will need to meet increasing demands on the safety, reliability, and efficiency of their critical infrastructure operations.

A. The Commission Must Not Focus Solely on Commercial Services or Auctions

Southern is particularly concerned that many of the commenters calling for a spectrum inventory are focused solely on identifying and reallocating spectrum for commercial wireless broadband and ignore entirely the pressing needs of other spectrum users that fulfill important public interest needs, such as utilities and other CII entities. For example, T-Mobile urged that the results of any spectrum inventory be used to allocate and auction an additional 200 MHz of

spectrum below 3.5 GHz for commercial mobile broadband use, with half of this “new” spectrum (100 MHz) coming from current government allocations and half (100 MHz) from spectrum regulated by the FCC.²⁴ Moreover, T-Mobile wants this “new” spectrum to be available for commercial use within the next three to five years and “without burdensome coordination or sharing requirements extracted by incumbent users.”²⁵ AT&T asserted that the national broadband plan should “reaffirm the government’s commitment to auctions as the best way of allocating spectrum,”²⁶ while Verizon stated that the goal of any spectrum inventory should be “to identify any underused spectrum that can be repurposed to auction for broadband use.”²⁷

However, with respect to spectrum allocation and spectrum policy, the Commission must take great care that any actions or recommendations that it may adopt will serve the public interest as a whole, not just the interests of commercial service providers. Contrary to the assertions of the commercial wireless sector, auctions are not necessarily the best nor the most efficient way to ensure that all spectrum is being used effectively to meet the needs of the American public. In fact, the Congressional Research Service addressed this very point in a report submitted to Congress on June 29, 2009. Specifically, in its report entitled, “Spectrum Policy in the Age of Broadband: Issues for Congress,” the Congressional Research Service stated:

Auctioning spectrum licenses may direct assets to end-use customers instead of providing wireless services where the consumer may be the beneficiary but not the customer. The role of wireless communications to support a smart grid has

²⁴ / Comments of T-Mobile at 17; *See also* Comments of Consumer Electronics Association at 7 – 8.

²⁵ / Comments of T-Mobile at 17.

²⁶ / Comments of AT&T at 137.

²⁷ / Comments of Verizon at 69.

been briefly noted in this report. Spectrum resources are also needed for railroad safety, for water conservation, for the safe maintenance of critical infrastructure industries, and for many applications that may not have an immediate commercial value but can provide long-lasting value to society as a whole.²⁸

As Southern has previously noted, non-commercial spectrum applications support a number of industries and operations that are a significant part of our country's economic and public well-being.²⁹ The impact that the loss of these critical bands would have on utility and CII operations and on the services they provide to the public far outweighs any benefits that might be recognized by reallocating these bands for commercial broadband service.

B. Utility and CII Spectrum Should Not Be Opened for Shared or “Opportunistic” Use

Commenters such as the New America Foundation have also urged the Commission to use the results of the spectrum inventory to open up various bands – including licensed bands – to shared use on an “opportunistic” or “dynamic” basis.³⁰ The feasibility of these proposals depends entirely on: (1) the ability of “smart radio” or cognitive radio technologies to actually detect and avoid other, higher-priority services; and (2) the enforceability of interference protections through nothing more than equipment certification. However, as Ericsson stated, “the Commission must be cautious about allowing secondary use of licensed spectrum.”³¹ According to Ericsson, technologies that enable secondary use, such as cognitive radios, “can

²⁸ / Linda K. Moore, *Spectrum Policy in the Age of Broadband: Issues for Congress*, CRS Report for Congress at 13 (2009).

²⁹ / Comments of Southern at 7; *See also* Comments of API at 3; Comments of EWA at 3; Comments of Motorola at 8 – 9.

³⁰ / Comments of the New America Foundation; *See also* Comments of Microsoft at 9; Comments of Dell at 12.

³¹ / Comments of Ericsson at 18.

create issues for the primary users of the spectrum they are trying to share,” and while techniques like signal analysis, power measurement, and pulse timing help, “their reliability is limited.”³²

Many of these new and proposed technologies have not yet been proven under real-world operating conditions, and the deployment of such technologies could compromise the viability of existing services. As Southern previously stated, utility communications systems must work twenty-four hours a day, seven days a week, 365 days a year at a standard of reliability of 99.999 percent.³³ Such a demanding requirement for reliability means that utility and CII operations are left with little or no margin for any potential interference, interruption, or diminution in their critical communications services. Accordingly, bands used by public safety, utilities, and other CII entities should not be considered for shared or “opportunistic” use at least until sufficient experience has been obtained to prove out *with absolute certainty* that opportunistic use of these bands (i) would not interfere, and (ii) would be terminated immediately upon a need to access this spectrum for public safety or critical infrastructure applications.

C. Measuring Spectrum “Use” and Defining “Underutilized Spectrum”

Finally, while many commenters urged the Commission to identify and either reallocate or open up “underutilized” spectrum for commercial broadband services, very few of these commenters offered any suggestions to the Commission as to how the “use” of spectrum should be measured or how “underutilized spectrum” should be defined.³⁴ The New America Foundation was the only commenter that attempted to quantify spectrum use, which it expressed in terms of a percentage. However, the New America Foundation did not provide any benchmarks for comparison, nor did its figures appear to take into account different technical

³² / Comments of Ericsson at 18 – 19.

³³ / Comments of Southern at 8.

³⁴ / *NOI* at ¶ 44.

properties and licensing frameworks for the various bands covered by its surveys.³⁵ IEEE-USA also addressed “use” and “utilization” of spectrum, noting that “spectrum utilization is, by its nature, deceptively hard to measure” and ultimately concluding that measuring “use” and defining “underutilized spectrum” would need to be done on a case-by-case basis.³⁶

IEEE-USA’s conclusion that spectrum “use” and “utilization” must be looked at on a case-by-case basis reinforces Southern’s position that “use” and “utilization” must be determined in a way that is appropriate to the users of that spectrum, taking into account not only the factors listed by the Commission – *i.e.*, different technical properties and licensing frameworks – but also the purpose for which the spectrum has been allocated and the manner in which the spectrum is used.³⁷ As Southern explained in its initial comments, CII and public safety spectrum must be instantaneously available at any time to handle large amounts of traffic on an urgent basis, and any determination or definition regarding the use or utilization of CII and public safety spectrum must therefore be based on peak usage levels during times of emergency.

For the reasons set forth above, if the Commission should decide to conduct a spectrum inventory in order to identify spectrum that may be suitable for wireless broadband, it should also consider the needs of other spectrum users. The Commission should furthermore treat those bands that are critical to utility and other CII operations as “unsuitable” for wireless broadband and should exclude them from consideration for possible reallocation or sharing with wireless broadband services.

³⁵ / As the Commission recognized in the *NOI*, any measurement of the “use” of spectrum must “account[] for different technical properties, licensing framework, and the like.” *NOI* at ¶ 44.

³⁶ / Comments of IEEE-USA at 5 – 7.

³⁷ / Comments of Southern at 9 – 12; See also Comments of UTC/EEI at 9, note 13.

IV. ADDITIONAL SPECTRUM MUST BE MADE AVAILABLE TO CRITICAL INFRASTRUCTURE INDUSTRIES

As the Commission looks to ways to improve access to spectrum for wireless broadband, Southern joins with UTC/EEI, NRECA, API, EWA, and Motorola in again urging the Commission to make additional spectrum available for utilities and other critical infrastructure industries, particularly in light of the new demands being placed on them by many of the same policies and mandates that are driving the efforts to expand broadband deployment.³⁸

A. Critical Infrastructure Industries Already Face Significant Spectrum Constraints

The spectrum bands currently relied on for critical utility and CII operations are increasingly congested and scarce, and narrow bandwidths and the technical and operational rules for some of these bands render them inadequate for current and future utility sector needs.

As Motorola stated:

Only about 30 MHz of spectrum across multiple frequency bands is available for internal use by enterprise operations and critical infrastructure users outside the public safety category. It is these operations on which Americans rely for the availability of electric power, natural gas to heat their homes, potable water to sustain life, transportation systems, the manufacture of all the consumer goods, and the provision of many other services on the market. Further, it is these enterprise and critical infrastructure organizations that have a significant effect on the availability of jobs and the state of the economy. Enterprise business and critical infrastructure entities will be relegated to internal communications systems that provide only voice and low speed data unless the Commission acts to provide additional spectrum.³⁹

Not only are utilities and other CII entities effectively relegated to about 30 MHz for their internal communications systems, but this same 30 MHz is also utilized by hundreds of

³⁸ / Comments of Southern at 13; Comments of NRECA at 11 – 13; Comments of API at 4 – 7; Comments of EWA; Comments of Motorola at 8 – 9.

³⁹ / Comments of Motorola at 8 – 9.

thousands of small, medium, and large business enterprises from all sectors of the economy.⁴⁰ Moreover, this 30 MHz of spectrum is scattered across several bands – including 6.95 MHz in the VHF band, 11.85 MHz in the UHF band, 6 MHz in the 800 MHz band, and 5 MHz in the 900 MHz band⁴¹ – none of which provide adequate bandwidth or channel sizes for the broadband applications that utilities and CII require to support their critical operations. According to EWA, most state-of-the-art broadband technology requires channels that are at least 5 MHz wide, whereas the typical land mobile voice channel is only 25 or 12.5 kHz wide⁴² – and these voice channels are being narrowed even further.

As API stated, the lack of available dedicated spectrum has compelled many CII entities to rely on the unlicensed bands for some of their communications needs.⁴³ However, as UTC/EEI pointed out, “unlicensed spectrum systems have their own issues with reliability, due to inherent concerns with interference and congestion,” thus making them unsuitable for supporting essential CII operations.⁴⁴ In addition, the extremely low power levels permitted in the unlicensed bands effectively make these bands unusable for supporting utility operations because of the high cost of building sufficient sites for the wide-area systems that utilities require to cover their service areas.

Overall, utilities and other CII entities already experience severe spectrum constraints that present significant obstacles to their ability to deploy and maintain even the most basic communications services necessary for their critical infrastructure operations, let alone their

⁴⁰ / Comments of EWA at 3.

⁴¹ / *See, e.g., id.* at 3.

⁴² / *Id.* at 4.

⁴³ / Comments of API at 8.

⁴⁴ / Comments of UTC/EEI at 9.

ability to deploy the broadband applications and services necessary to ensure the safety, reliability, and efficiency of the nation's critical infrastructure.

B. Additional Dedicated Spectrum is Necessary for “Smart Grid” Deployment

As discussed above in these reply comments, utilities also require access to additional spectrum in order to deploy new smart grid technologies – a fact already recognized by the Congressional Research Service in its recent report to Congress on spectrum policy. According to this report, “[A]n efficient Smart Grid requires spectrum capacity to support the broadband communications infrastructure required to operate the grid. A Smart Grid policy that presumes the availability of suitable spectrum for wireless connections could fall short of its intended goal unless spectrum policy is aligned.”⁴⁵

In June 2009, the National Institute of Standards and Technology (NIST) released a report it had commissioned from the Electric Power Research Institute on the development of technical standards for smart grid interoperability. According to this report:

The Smart Grid provides mission-critical capabilities to the US economy and infrastructure. Communications is a key aspect of ensuring interoperability and increased efficiencies. Yet wireless Smart Grid device manufacturers and system integrators struggle with communication interference issues with other devices in unlicensed radio spectrums ... At the workshops, a recurring theme emerged desiring licensed spectrum for Smart Grid communications.⁴⁶

As the Commission considers what actions and recommendations regarding spectrum it should take as part of its national broadband plan, it should carefully consider the issues raised

⁴⁵ / Linda K. Moore, *Spectrum Policy in the Age of Broadband: Issues for Congress*, CRS Report for Congress at 7 – 8 (2009).

⁴⁶ / Electric Power Research Institute, Report to NIST on the Smart Grid Interoperability Standards Roadmap, June 17, 2009 at 94, available at <http://www.nist.gov/smartgrid/InterimSmartGridRoadmapNISTRestructure.pdf> (last accessed July 20, 2009).

and conclusions reached by other federal agencies and branches and should coordinate its work with the Department of Energy, FERC, NIST, and other government bodies.

C. Utilities and CII Have Few, If Any, Practical Alternatives for Meeting Their Pressing Spectrum Needs

Despite this pressing need for additional spectrum to support the technologies and systems necessary to meet the important national policy goals of increased energy efficiency and reliability, utilities and critical infrastructure industries have few, if any, practical options for obtaining this additional spectrum. As UTC/EEI stated, it is “virtually impossible to conceive that a state regulator would approve a large, yet unknown amount of capital expense so that a utility could compete against commercial operators [at auction] for spectrum, with no guarantee of success and large additional outlay needed for system build-out.”⁴⁷ Because their networks are used exclusively for internal communications, utilities also cannot offset the costs of acquiring spectrum at auction through the recovery of commercial network service revenues.⁴⁸ Moreover, the geographic areas covered by licenses at auction seldom, if ever, correlate with a utility’s service area, thus forcing a utility to either overpay for more spectrum than it needs or to risk acquiring too little spectrum and being left with coverage gaps that make the utility’s use of the spectrum to support its operations infeasible.⁴⁹ Similar issues often make spectrum leases an impractical option for meeting either the reliability and coverage needs or cost constraints of rate-regulated utilities.

⁴⁷ / Comments of UTC/EEI at 9.

⁴⁸ / *See id.* at 9.

⁴⁹ / *See id.* at 10.

Some commenters have suggested that utilities obtain their smart grid and other communications service needs from commercial communications service providers.⁵⁰ However, as Southern, UTC/EEI, and API have previously explained, commercial networks are generally not designed or built to provide the levels of reliability, survivability, availability, and coverage that are necessary to meet utility and CII communications needs, particularly during times of emergency.⁵¹ As Motorola stated, “It is incorrect to assume that the broadband needs of [utility and CII] users will be adequately met by commercial mobile services providers, which cannot readily satisfy the unique coverage, service, or application requirements of enterprise businesses and critical infrastructure entities.”⁵²

In its initial comments, UTC/EEI explained that public communications networks become overloaded and can be unavailable during and in the aftermath of emergencies and natural disasters – precisely when utility/CII communications are urgently needed.⁵³ Another commenter noted, “Public safety agencies and operators of critical infrastructure will have locations where they need wireless connectivity or additional bandwidth that commercial carriers cannot financially justify,”⁵⁴ especially in remote areas away from population centers.

For reasons of operational reliability and system security, it is also essential for utilities and CII to maintain direct control over their communications systems. As previously discussed in these reply comments, utilities are subject to mandatory reliability and security requirements

⁵⁰ / See, e.g., Comments of Global e-Sustainability Initiative (GeSI) at 2. GeSI is an association of commercial communications service providers and equipment and technology vendors. See also Comments of Cox Communications at 10.

⁵¹ / Comments of Southern at 14; Comments of UTC/EEI at 8; Comments of API at 5.

⁵² / Comments of Motorola at 9.

⁵³ / Comments of UTC/EEI at 8.

⁵⁴ / Comments of the Grant County Sheriff’s Office at 2.

established and enforced by FERC and NERC. Therefore, as UTC/EEI correctly noted, utilities “cannot afford to hand over the liability for their communications reliability to a third party.”⁵⁵

If a third party’s network, “subject to other demands and built to a consumer-serving economic model, should not perform as needed (regardless of any service level agreement),” the utility stands ultimately liable and ultimately answerable to regulators and to the communities they serve for any problems arising from the defective communications service.⁵⁶ Moreover, the use of any third party communications network or service effectively introduces additional “points of entry” into a utility’s communications system that could be exploited by a cyberattack against the utility’s systems or infrastructure.

D. Recommendations for Identifying Additional Spectrum to Meet Utility and CII Needs

For the reasons set forth above, and in response to Congress’ requirement that the national broadband plan include plans to advance policy goals such as energy independence and efficiency, public safety and homeland security, and overall consumer welfare,⁵⁷ the Commission should consider as part of this proceeding a plan to make additional spectrum available to utilities and other CII users.

In order to ensure that this spectrum meets the operational needs of utilities and critical infrastructure industries in the safe, reliable, and efficient provision of essential services to the public – and thus “can provide long-lasting value to society as a whole”⁵⁸ – the Commission should make licensed spectrum available to utilities and CII in the bands below 2 GHz. The

⁵⁵ / Comments of UTC/EEI at 8 – 9, note 12.

⁵⁶ / *Id.*

⁵⁷ / Recovery Act § 6001(k)(2)(D).

⁵⁸ / Linda K. Moore, *Spectrum Policy in the Age of Broadband: Issues for Congress*, CRS Report for Congress at 13 (2009).

lower frequency bands are especially vital for utility communications due to the expansive and comprehensive geographic coverage of utility networks. As Motorola stated in its initial comments, “[T]he large geographies that electric grids encompass make it desirable to use lower frequency spectrum (*i.e.*, below 2 GHz) to take advantage of more favorable propagation characteristics.”⁵⁹ Utility communications systems must be capable of covering the entire grid regardless of terrain or population, and must be able to do so with the highest degree of reliability possible regardless of conditions. This can only be accomplished through the use of frequencies in the lower part of the band.

For example, the Commission should give careful consideration to UTC/EEI’s recommendation that the 1800-1830 MHz band, which is currently allocated for federal government use, be made available for utility and CII operations.⁶⁰ As UTC/EEI and others have noted, this band has already been allocated in Canada to support the operations, maintenance and management of the electric supply, and harmonizing the use of this band with Canada – which shares an electric grid with the United States – would promote the efficient use of this spectrum, promote the deployment of smart grid and other broadband technologies, facilitate interoperability, improve the overall reliability and efficiency of the North American power grid, and serve the vast needs of growing systems and increasing wireless data loads.⁶¹ Moreover, this result can be achieved without formally reallocating this spectrum block from government use.

Specifically, among its options, the Commission could coordinate with the National Telecommunications and Information Administration (NTIA), the Department of Energy, FERC, and other energy regulators at all levels of government to develop a spectrum-sharing

⁵⁹ / Comments of Motorola at 36.

⁶⁰ / Comments of UTC/EEI at 10 – 11.

⁶¹ / *See id.*; Comments of NRECA at 12, note 31.

arrangement between the federal government and utilities and critical infrastructure industries in the 1800-1830 MHz band – an arrangement that would have several advantages. For example, a spectrum-sharing arrangement would provide the government with certainty that this spectrum will be used to advance important national policy goals concerning energy efficiency, reliability, and security. In addition, a spectrum-sharing arrangement between federal government users and utility/CII users would serve important national security interests by keeping sensitive information about the nation’s critical infrastructure out of the public domain.

Southern also reiterates its earlier recommendation that the Commission consider changes to its rules that would promote public/private partnerships between public safety and utilities/CII for the development, deployment, and operation of infrastructure and services in the 700 MHz and 4.9 GHz bands that would serve the communications needs of both public safety and CII.⁶² Although such partnerships have great potential, it is extremely doubtful whether any utility or CII entity would be willing to undertake such an investment without the necessary legal and regulatory protections and certainty regarding its ongoing authority to operate in that band or on that infrastructure.

Finally, commenters such as the Wireless Communications Association International (WCAI) and the Rural Telecommunications Group (RTG) have urged the Commission to follow through on pending proposals that would make part of the TV “white spaces” spectrum available for fixed, point-to-point wireless backhaul services on an exclusive license basis.⁶³ This use of the TV “white space” bands may also present an opportunity for the Commission to address the spectrum and wireless communications needs of utilities and other CII entities, many of whom

⁶² / Comments of Southern at 15 – 16.

⁶³ / Comments of the Wireless Communications Association, International (WCAI) at 45 – 47; Comments of the Rural Telecommunications Group (RTG) at 6 – 7.

have infrastructure and communications needs in rural and remote areas where the licensing of these bands would be most effective. Therefore, Southern urges the Commission to consider utility and CII needs as it examines the various proposals regarding licensing in the TV “white space” bands and to consider licensing and service rules that would facilitate utility and CII usage of these bands.

V. OTHER ISSUES RAISED IN THE COMMISSION’S NOTICE OF INQUIRY

A. Pole Attachments

In response to some comments that have been filed in this proceeding, Southern supports the comments of UTC/EEI⁶⁴ and again urges the Commission to refrain from taking any measures with respect to pole attachments that could potentially undermine the safety and reliability of the nation’s electric infrastructure. Southern reiterates that any measure that could potentially affect the safety and reliability of the electric grid would negatively affect *all* Americans and would actually hinder the very goals that the national broadband plan is intended to advance.

As Southern stated in its initial comments, the Commission already has a voluminous record in its separate proceeding on pole attachments.⁶⁵ As with its consideration of a national broadband plan, the Commission must not look at the record of the pole attachment proceeding in isolation, but should instead evaluate this record in light of new national policies on energy independence and security that have been established since the release of the Commission’s *Pole Attachment NPRM*. Congress, the Department of Energy, and state governments and agencies

⁶⁴ / Comments of UTC/EEI at 14 – 20.

⁶⁵ / *Implementation of Section 224 of the Act; Amendment of the Commission’s Rules and Policies Governing Pole Attachments*, WC Docket No. 07-245, RM Docket Nos. 11293, 11303, Notice of Proposed Rulemaking, 22 FCC Rcd 20195 (2007) (“*Pole Attachment NPRM*”).

have repeatedly made clear that the safety and reliability of the nation's electric grid are top priorities, and these priorities must not be compromised.

B. Cybersecurity

Cybersecurity efforts and initiatives are currently underway throughout the federal government, including in Congress, the White House, the Department of Energy, and so forth. The existence of these multiple efforts points to the need for coordination and leadership to ensure consistency across all platforms and applications in the adoption of any standards, requirements, or guidelines regarding cybersecurity.⁶⁶

To the extent the Commission may recommend or adopt cybersecurity requirements in the future, Southern agrees with Verizon that any such requirements must not require compliance with inflexible standards nor in any way restrict the flexibility of network managers to respond to threats to their networks.⁶⁷

VI. CONCLUSION

As set forth above in these reply comments, the Commission should give strong consideration to the ways in which the national broadband plan can advance the important national interests in energy independence and efficiency and the security and reliability of our nation's critical infrastructure. Accordingly, Southern urges the Commission to maintain and protect the limited amount of spectrum currently available to utilities and other critical infrastructure industries and to make additional dedicated spectrum available for the essential communications systems – including broadband applications – necessary to support utility and CII operations now and in the future. In so doing, the Commission can ensure that its national

⁶⁶ / See, e.g., Comments of AT&T at 145.

⁶⁷ / Comments of Verizon at 51 – 53.

broadband plan addresses the concerns of Congress as expressed in Section 6001 of the Recovery Act.

WHEREFORE, THE PREMISES CONSIDERED, Southern Company Services, Inc. respectfully requests the Commission to take action in this docket consistent with the views expressed herein.

Respectfully submitted,

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